

REMARKS

In an Office Action dated October 19, 2006, the Examiner rejects claims 1-11, 13-15, 17, 18, 20-34, and 36, 39-45 (All Pending Claims). In response to the Office Action Applicants amend claims 1 and 20; and respectfully traverse the rejections. Claims 1-11, 13-15, 17, 18, 20-34, and 36, 39-45 remain in the Application. In light of the following arguments, Applicants respectfully request that the rejections be removed and the claims be allowed.

Applicant has amended claim 1 and 20 to more correctly state what Applicants regard as this invention. Specifically, Applicants amend claims 1 and 20 to recite that the coupling agent is a selected acid neutralized with alkanolamine to form a water soluble salt. Basis for this is found at page 11, lines 1-20 of the specification. Furthermore, the amendments correct the informality cited by the Examiner. Thus, Applicants respectfully request that the §112 rejection be removed,

Claim 1 is rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. Patent number 5,284,492 issued to Dubin (Dubin). In order to maintain a rejection the Examiner has the burden of providing evidence of prima facie obviousness. See MPEP §2143. See also In Re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). In order to prove prima facie obviousness, the Examiner must provide evidence in the prior art of a motivation to combine or modify a reference, a reasonable expectation of success, and a teaching of each and every claimed element. *Id.*

Amended claim 1 recites "...a coupling agent for maintaining phase stability at high temperatures and shear pressures in said internal combustion engine wherein said coupling agent is a one selected from a group consisting of: a di-acid of the Diels-Alder adducts of unsaturated fatty acids and a tri-acid of the Diels-Alder adducts of unsaturated fatty acids neutralized with an alkanolaminated to form a water soluble salt."

Dubin does not teach this limitation. Chemicals acting as a coupling agent in a turbine are different from the compounds that may act as a coupling agent in an internal combustion engine as the heat and shear in the two types of engine are different. It is obvious that a fuel applicable in a gas turbine cannot be immediately assumed to work in an internal combustion engine. A good example of this is kerosene, which is commonly used in aviation gas turbines but will not burn in an internal combustion engine using compression ignition. Therefore, any teachings of Dubin have no relation to the present invention, as one with ordinary skill in the art would not associate them readily. Furthermore, Dubin does not teach the coupling agent recited in amended claim 1.

Applicants have read the entirety of Dubin and can find no reference to a coupling agent. In particular, Applicants have not found any reference to a coupling agent that maintains phase stability at the high temperatures and sheer pressures in an internal combustion engine. Still more particularly Applicants cannot find a teaching of a select Diels-Alder adduct (D_A) neutralized with an alkanolamine to form a water soluble salt. Instead Dubin teaches the use of di- and tri- acids as created for use as lubricity enhancers, the di- and tri- acids are oil soluble. See Col. 7, lines 15-65. Thus, the di- and tri- acids taught in Dubin are not useful at the high temperatures and sheer pressures in an internal combustion engine as the coupling agents are not water soluble. Specifically there must be a significant amount of the D-A and alkanolamine in the emulsion to promote mixing enough to form a salt that is not holding the combined chemical in the petroleum distillate portion of the fuel. There must be enough of both compounds in the solution to promote a combination to form a water soluble salt. The water soluble salt is then diluted in the water and does not burn immediately with the distillate when delivered to a firing chamber of an engine. Instead, the salt is suspended in water giving it a higher temperature for burning. Thus, making the inverted emulsion

practical for internal combustion engines that typically have higher pressures and sheer temperatures.

As is clear from the abstract of Dubin, the disclosed fuel is for a turbine engine. Thus, the Dubin fuel does not need to withstand the same pressures or temperatures as the emulsion as recited in amended claim 1. All of the other references do not disclose the use of di- or tri- acids as recited in amended claim 1 and are merely added to include various other additives into the emulsion. Thus, the A-D and alkanolamine recited in amended claim 1 are not taught by the reference provided by the Examiner. Therefore, Applicants respectfully request that the rejection of claim 1 be removed and amended claim 1 be allowed.

Applicants would like to further assert that Dubin does not teach the surfactant recited in amended claim 1. Specifically, amended claim 1 recites “a surfactant package comprising a primary surfactant, a block copolymer stabilizer, and a polymeric dispersant.” Dubin does not teach this limitation. Instead Dubin teaches the use of a physical emulsion stabilizer including waxes and cellulose products. See Col. 6, lines 54 - Col. 7, line 3. One skilled in the art will recognize that a chemical stabilizer and a physical stabilizer do not react with an emulsion in the same way. Specifically, the physical stabilizer physically prevents the mixing of the petroleum based product and water while a chemical stabilizer changes the property of the material to prevent the separation. While Dubin may recite the presence of certain compounds, the use of the compounds as a stabilizer requires different concentrations of the compounds. Reciting the compound as used for one type of additive requires differing concentrations. Thus, the recitation of the compounds in Dubin as other types of additives does not teach the compounds being used as another type of additive. Thus, Dubin does not teach the

surfactant recited in amended claim 1. Therefore, Applicants respectfully request that the rejection of claim 1 be removed and amended claim 1 be allowed.

Furthermore, the surfactant of amended claim 1 includes a polymeric dispersant. A dispersant is not taught in Dubin. In fact, nowhere in Dubin is a dispersant taught. It has been found that use of a dispersant increases the stability of emulsion and allows for decreased amounts of another material. This is shown in formulations XIII and XIX in table 1 of the specification. Therefore, Dubin does not teach the dispersant recited in amended claim 1.

For these reasons, Applicants respectfully request that the rejection of claim 1 be removed and amended claim 1 be allowed.

Since claims 2-11, 13-15, and 17-18 depend from claim 1 Applicants respectfully submit that claims 2-11, 13-15 and 17-18 are also patentable as they contain the same limitations as amended claim 1.

The same arguments made above with respect to the patentability of amended claim 1 are applicable to the patentability of amended claim 20 as well.

Since claims 21-34, 36-37, and 39-45 depend from claim 20, Applicants respectfully submit that claims 21-34, 36-37, and 39-45 are also patentable as they contain the same limitations as amended claim 20.

If the Examiner has any questions regarding this application, the Examiner may telephone the undersigned at 775-586-9500..

Respectfully submitted,
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